IMPERIAL BUREAU OF MYCOLOGY
1 JUN. 1927

LEAFLET No. 176.

Western Australia.

DEPARTMENT OF AGRICULTURE.

EXANTHEMA.

(*A Dieback of Orange Trees.*)

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Exanthema, though not one of our important citrus diseases, occurs more or less throughout our orange-growing areas. It is not infectious or due to parasitic organisms, but is a result of unsatisfactory conditions for plant nutrition, especially in relation to soil moisture. Exactly how it is brought about is not understood. It is evident, however, that it is a condition connected with the physical nature of the soil and subsoil in some cases; in others with drainage; and yet again with the excess or deficiency of available nitrogen. As a consequence the same treatment does not necessarily give the same results under different conditions. For instance, though the use of stable manure is beneficial in California and in New South Wales, its action is the reverse in Florida.

Exanthema in this State occurs principally on light or gravelly soils with a stiff or gravelly subsoil. Seasonally its occurrence varies considerably. 1920 was a bad year, but since then it has given little trouble except on occasional trees.

Badly affected trees show typical dieback (Plate 1). The fruit is discoloured and cracked (Plate 4).

There are certain symptoms by which Exanthema may be detected even in the early stages. These are given so that the disease may be recognised and treatment applied before the trees become badly affected. It is a commonplace truth that it is easier to check trouble at its beginning than to attempt to revive the healthy growth of a badly affected tree:—

1. The leaves on strong water-shoots tend to be abnormally large and coarse (Plate 2). These shoots also have a tendency to droop outward, and to grow upward at the end, forming an S-shaped curve.

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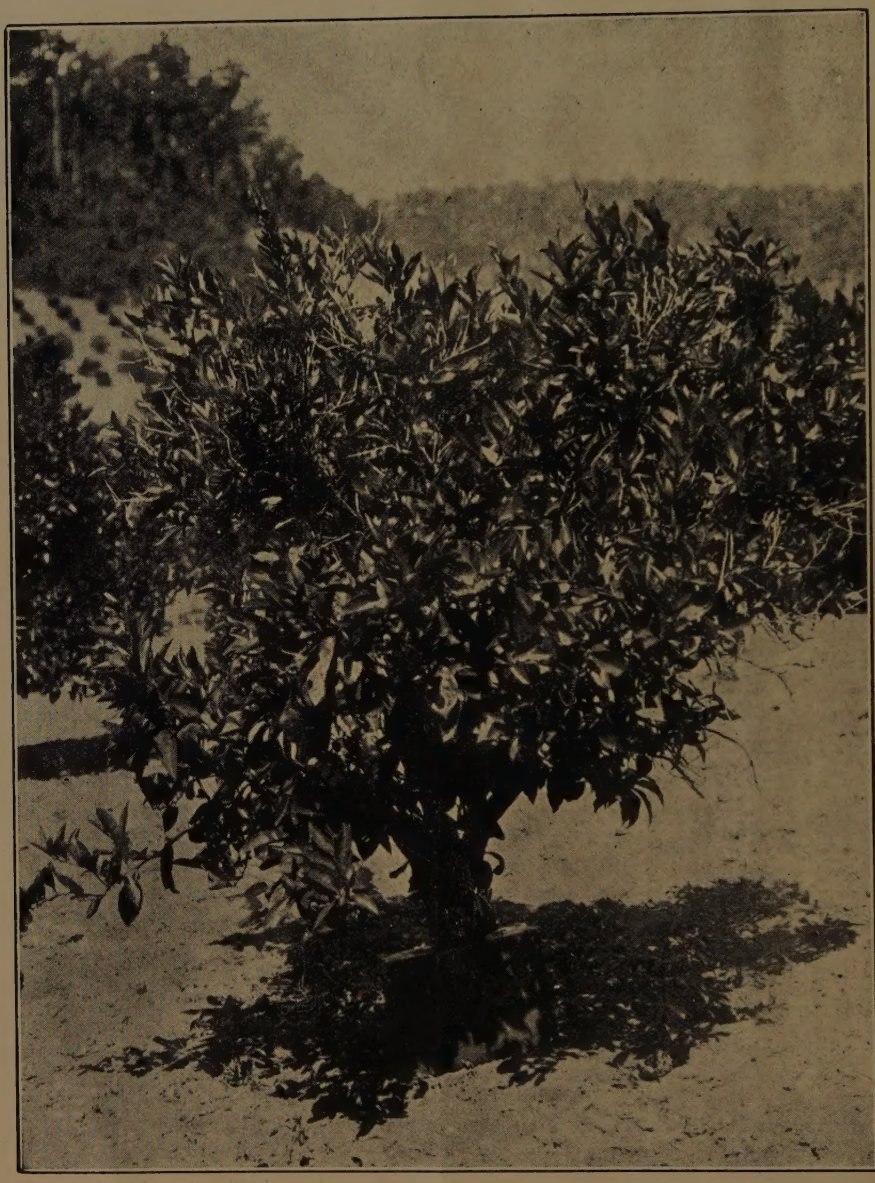

Plate 1.

Typical die-back of orange tree due to Exanthema.

2. Young shoots develop small blister-like swellings or gum pockets (Plate 3). If opened these will be found to contain a clear gum. Later these gum pockets develop into longitudinal ruptures edged with rough brown ridges. During wet weather gum exudes from these ruptures. Once formed the cankerous growth persists and may be found on the older branches of trees which have long since thrown off the disease.

Plate 2.

A. Normal orange leaf.

B. Abnormally large leaf on water shoot affected with Exanthema. This leaf was 8½ inches long.

3. Affected shoots tend to drop their leaves and to die back. The growth of laterals from the bases of the dead twigs produces a typically bunchy habit. This is increased by the fact that growth buds on affected trees frequently develop in clusters instead of twos. These give rise to bunches of weak shoots.

4. The fruit is small and is spotted or blotched with irregular brown markings which become hard and dry, finally splitting. (Plate 4).

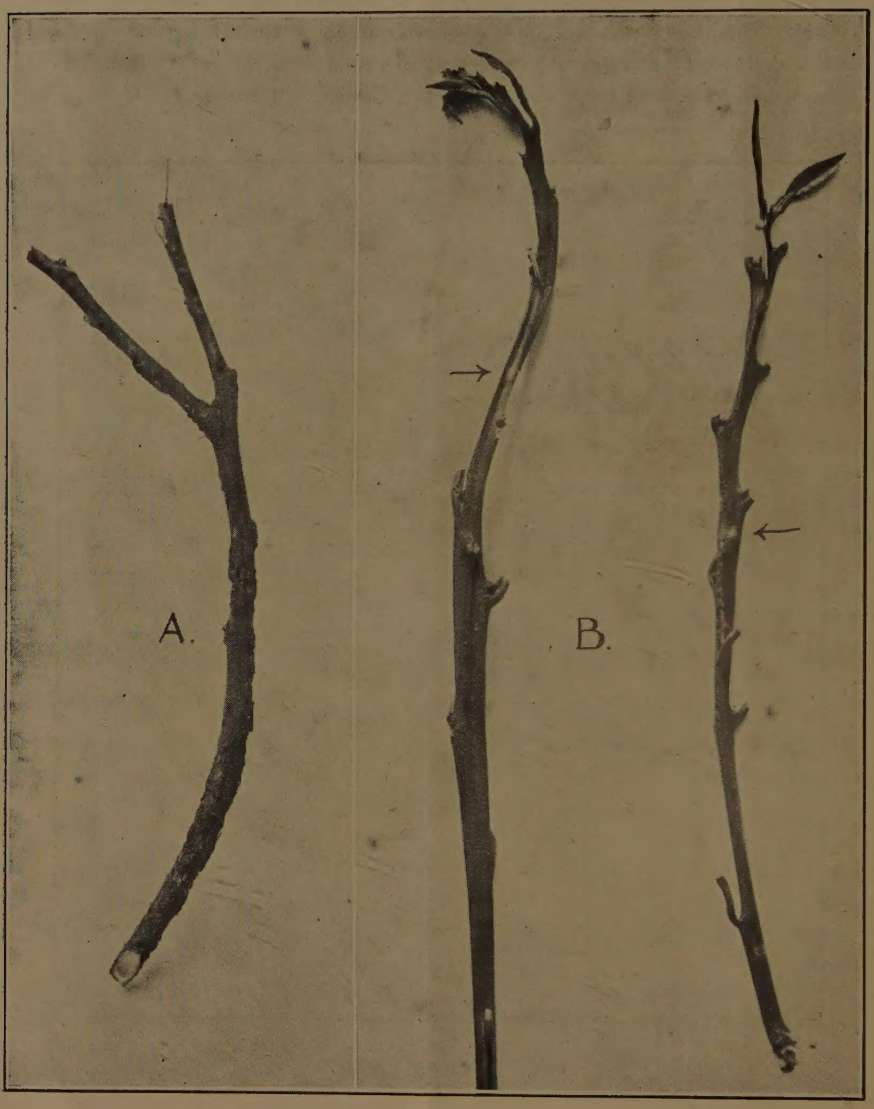

Plate 3.

A. Branch showing cankerous ruptures typical of Exanthema.

B. Gum pockets on young shoots which eventually produce the cankerous growth shown in A.

Control.

1. Selection of site: As already pointed out, Exanthema occurs principally on light or gravelly soils with a stiff subsoil. Such soils cannot be regarded as suitable for oranges. Lemons do much better on them.

2. In California and in New South Wales a good dressing of stable manure—about half a cartload per tree—has given good results. This is well worth trying here when the manure is available.

3. Experiments by Mr. G. Wickens, Officer in Charge of Fruit Industries in this State, have shown very favourable results from the use of copper sprays. One spraying of Bordeaux Mixture (4-4-40) applied in August

Plate 4.
Oranges showing staining and cracking due to Exanthema.

or September appears to be sufficient for a year or more in most cases. The trees should not be sprayed unnecessarily as copper preparations are liable to be followed by an outbreak of scale insects.

4. When Exanthema is bad, however, the condition of the trees is evidence that the soil and situation are unsuitable for oranges, and that the most reasonable procedure would be to root them up and to plant mandarins, lemons, or stone fruits in their place.

By Authority: Fred. Wm. Simpson, Government Printer, Perth.